

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 24 October 2011 has been entered.

Response to Amendment

1. The amendments and arguments/remarks filed on 11 October 2011 have been entered and fully considered.
2. Instant claims 1 and 5 have been amended currently.
3. Instant claims 2-3 have been cancelled previously.
4. A previous request for continued examination was filed and entered on 03 March 2011.
5. Instant claims 1 and 4-15 are pending currently.

Priority

Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 1, 4, and 6-15 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent Application Publication 2003/0134316 A1 (Tashiro et al.).

In regards to instant claims 1, 4, and 6-15 - Tashiro et al. discloses a method of stirring a reaction solution in a micro-reaction vessel by imparting a magnetic field fluctuation from the exterior of said reaction vessel to magnetic beads contained in said reaction solution (Abstract and Fig. 1-2). The method of Tashiro et al. further discloses employing at least one of two plates with DNA immobilized on the surface, a reaction solution for hybridization that has target DNA, and sealing of magnetic beads within the reaction vessel prior to mixing via a magnetic field (paragraph [0020]-[0021] and Fig. 1-2). Tashiro et al. disclose that the magnetic beads have uniformed and/or non-uniformed diameters of about 0.001 to 0.1 mm (paragraph [0021]), and that the beads are rotated and stirred using multiple electromagnets (paragraph [0027]). Tashiro et al. discloses that the magnetic beads employed are treated with a resin to prevent them from contacting and/or reacting with components in the reaction solution (paragraph [0022]). Tashiro et al. discloses the use of probes/dots stamped on a slide glass with a diameter of about 100 to 150 micrometer (paragraph [0035]) and that the probes/dots comprise DNA for hybridization (paragraph [0002]); furthermore, it is well known that circular drops of liquids develop flat surface when they are placed on a flat surface. Tashiro et al. discloses that stirring with the beads is done in the upper part of the reaction vessel (paragraph [0038] and Fig. 2).

Tashiro et al. does not explicitly state that the carrier and/or a container have a structure that prevent fine particles or air bubbles from coming into contact with a

selective binding substance-immobilized surface carrier. However, it is evident that the reaction vessel employed by Tashiro et al. has upper and lower structures (Fig. 1-2). Magnetic beads and electromagnets are employed for mixing and are maintained in the upper part of their reaction vessel, and probes/dots stamped on a slide glass are employed in the lower part of the same reaction vessel (Fig. 2). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to employ the design of the reaction vessel of Tashiro et al. to prevent the beads of the upper area of the reaction vessel from contacting the stamped probes of the lower surface in the same reaction vessel – similar to fine particles being prevented from contacting a selective binding substance-immobilized surface carrier as stated by the instant claims.

Allowable Subject Matter

Claim 5 is allowed.

The following is an examiner's statement of reasons for allowance: instant claim 5 now recites a physical structure within the method wherein the size of particles is dictated by the distance between a container and substance supporting surface.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Response to Arguments

Applicant's arguments with respect to claims 1 and 5 have been considered but are moot in view of the new ground(s) of rejection and indication of allowable subject matter.

However, for clarity, regarding the newly added limitation of convex-concave structures in instant claim 1, Tashiro et al. discloses the use of probes/dots stamped on a slide glass with a diameter of about 100 to 150 micrometer (paragraph [0035] and Fig. 2). It is well known that circular probes and/or stamped dots encompass convex-concave structures.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to BRYAN KILPATRICK whose telephone number is (571)270-5553. The examiner can normally be reached on Monday - Friday, 8:00 am - 4:00 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, In Suk Bullock can be reached on (571)272-5954. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/B. K./
Examiner, Art Unit 1772

/SAM P SIEFKE/
Primary Examiner, Art Unit 1772